

**Amendments to the Drawings:**

The attached sheets of drawings replace pending Figures 1-2A. Figures 1 and 2 are resubmitted as higher resolution figures in an effort to improve clarity. New Figures 1A and 1B are presented to provide additional views to emphasize claimed features. Figure 2A has been replaced by a new Figure 2A which also provides an additional view to emphasize claimed features. These amendments have been made to address the drawing objections made by the Examiner and do not add any new matter. These sheets replace the original sheets including Figures 1-2A.

### **Remarks**

Claims 1-5, 7-9 and 11-13 are pending in the application, of which claims 1-5, 7-9 and 11-13 are rejected. By this paper Applicants amend claims 1-5, 7-9 and 11-13, replace all of the figures and amend the specification.

The Office Action Summary Sheet states "[t]he drawings filed on 23 June 2005 is/are . . . objected to by the Examiner." Replacement drawings were submitted with the Amendment filed on June 16, 2008. Applicants wish to thank Primary Examiner Hepperle for his assistance in clarifying the drawing objections during a phone conversation on January 14, 2009. Accordingly, Applicants assume Examiner Lee did not consider the replacement drawings filed on June 16, 2008 for his objections in the Office Action mailed on September 16, 2008. By this paper Applicants replace pending Figures 1-2A, with Figures 1-2A.

Examiner Lee raised many questions with his 35 U.S.C. § 112 rejections. Applicants left multiple voice mail messages, but was unable to reach Examiner Lee to clarify these questions prior to his departure from the USPTO. By this paper, the Applicants address these questions by making significant amendments to the claims and by presenting additional views in the drawings. If there are any outstanding issues preventing allowance, Applicants respectfully request that a telephonic interview be arranged prior to the first office action.

Although the specification was not objected to in the Office Action, by this paper Applicant amends the specification to reference the drawing amendments and to put the specification in proper U.S. format. If requested by the Examiner, the Applicants are willing to provide a substitute specification.

#### ***Drawing Objections - 35 C.F.R. § 1.83(a)***

The Examiner has objected to the drawings in reference to claims 1,7 and 11, stating "the internal shape that allows fluid to drain out of the valve body . . . must be shown or

the feature(s) canceled from the claim(s)." Claims 1, 7 and 11 as amended require "the internal shape having an upstream void in fluid communication with the upstream connector . . . [and] a downstream void in fluid communication with the downstream connector. . . ." The upstream void (3), the upstream connector (1), the downstream void (4) and the downstream connector (2) are illustrated in Figures 1-2A.

The Examiner has objected to the drawings in reference to claim 4, stating "a down stream connector contoured and smooth to promote free draining including a small discontinuity sized to break surface tension . . . must be shown or the feature(s) canceled from the claim(s)." Claim 4 as amended requires "the downstream connector further comprises a notch forming a discontinuity extending axially along the inner periphery of the downstream connector to break surface tension." The notch (11) and downstream connector (2) are illustrated in Figures 1-2A.

The Examiner has objected to the drawings in reference to claim 5 stating "a thermodynamic external body shape to maximize achievable temperature in the down stream side and downstream connector of the valve . . . must be shown or the feature(s) canceled from the claim(s)." Claim 5, as amended requires "the valve body is provided with a cavity forming a thermal break between the heater and the upstream connector . . . for maximizing achievable temperature in the downstream void and the downstream connector . . . ." The cavity (12), the heater (7) the upstream connector (1) and the downstream connector (2) are illustrated in Figure 1, and additional illustrations of the cavity (12) are provided in Figures 1A-2A.

The Examiner has objected to the drawings in reference to claims 9 and 13, stating "a thermodynamic external body shape to maximize achievable temperature in the down stream side and downstream connector of the valve . . . must be shown or the feature(s) canceled from the claim(s)." Claims 9 and 13, as amended require "the valve body is provided with a cavity forming a thermal break between the heater and the upstream connector . . . for maximizing the heat conducted into the sealing face . . . ." The cavity (12), the heater (7), the upstream connector (1) and the sealing face (6) are illustrated in Figure 1, and additional illustrations of the cavity (12) are provided in Figures 1A-2A.

***Drawing Objections - 35 C.F.R. § 1.84(p)***

The Examiner has objected to the drawings stating "[r]eference character (numerals are preferred), sheet numbers, and view numbers must be plain and legible, and must not be . . . enclosed within outlines, e.g., encircled." The reference characters were enclosed within outlines (encircled) in the application as filed; however, in the amendment filed on June 16, 2008 the Applicants submitted replacement figures removing such outlines. As mentioned above, Applicants assume that Examiner Lee did not consider the replacement drawings filed on June 16, 2008 for this objection, and therefore did not see that the reference characters were no longer encircled. By this paper Applicants present Figures 1-2A, all without encircled reference characters.

***Claim Rejections - 35 U.S.C. § 112***

**Rejection of claim 4**

Claim 4 is rejected under 35 U.S.C. § 112 second paragraph, because the Examiner states that "[i]t is vague and indefinite as to what is meant by 'to promote free draining including a small discontinuity sized to break surface tension'." Accordingly, by this paper Applicants amend claim 4 such that "the downstream connector further comprises a notch forming a discontinuity extending axially along the inner periphery of the downstream connector to break surface tension." As mentioned above, the Examiner's additional questions are addressed by the amendments to the claim and additional figures presented.

**Rejection of claims 5, 9 and 13**

Claims 5, 9 and 13 are rejected under 35 U.S.C. § 112 second paragraph, because the Examiner states that "it is unclear that what shape of claimed invention is capable of performing 'maximize achievable temperature' ." Accordingly, by this paper Applicants amend claims 5, 9 and 13, such that "the valve body is provided with a cavity forming a thermal break between the heater and the upstream connector . . . ." As mentioned above, the Examiner's

additional questions are addressed by the amendments to the claims and additional figures presented.

***Claim Rejections - 35 U.S.C. § 102 (b)***

**Rejection of claims 1-5, 7-9 and 11-13 by Kusumoto**

The Examiner has rejected claims 1-5, 7-9 and 11-13 under 35 U.S.C. § 102 (b) as being anticipated by Kusumoto et al. (US Patent No. 6,227,236).

Amended claim 1 requires "a smooth and contoured unitary valve body with an integral upstream connector, downstream connector and a smooth and contoured internal shape for providing a defined flow path therebetween . . . ." (emphasis added). The valve taught by Kusumoto et al. is not unitary, rather it includes a valve chamber 1 with many attached components, as seen by the different cross hatching and fasteners in Figure 3. Additionally Kusumoto et al. teaches that [a]t the outlet 3 of the valve chamber 1, a short tubular valve seat 4 is mounted . . . ." (Kusumoto et al., column 3, lines 53-54). Kusumoto et al.'s valve is an example of a prior art valve that the Applicants provide improvements over, a valve that comprises "internal joints, crevices, sliding grooves and attachments . . . [which] provide areas for product to lodge, harbouring microbiological contamination and creating difficulties for cleaning." (page 2, starting at line 30, emphasis added). Kusumoto et al. does not teach or suggest a "unitary valve body with an integral upstream connector, downstream connector . . . ." as claimed and claim 1 is not anticipated thereby.

Further, claim 1 as amended requires "a flexible sealing membrane . . . selectively operable to a range of positions relative to the sealing face to vary the flow rate of fluid through said valve . . . ." (emphasis added) The Examiner relies on the O-ring 6 taught by Kusumoto et al. for satisfying the claim limitation. An O-ring is not a membrane. Additionally, the "O-ring 6 for sealing is disposed in the groove 5c to stop a fluid from flowing when the O-ring 6 is in contact with the valve seat 4." (Kusumoto et al., column 3 line 67 - column 4 line 2, emphasis

added.) The O-ring is not "selectively operable . . . to vary the flow rate . . ." as claimed and claim 1 is not anticipated thereby. (emphasis added)

Additionally, amended claim 1 requires "an elongated heater mounted adjacent to the downstream connector and within said valve body so as not to be in contact with the fluid or disrupt the smooth and contoured internal shape, said heater being operative to locally heat the downstream void and downstream connector . . . ." (emphasis added) The Examiner relies on heaters 20 and 22 for satisfying the claim limitations (of the previously presented claim). Kusumoto et al.'s heaters 20 and 22 are not mounted "adjacent to the downstream connector" as claimed, rather they are mounted within piston rod 8 that moves relative to the outlet 3. (as illustrated in Figure 3) Additionally Kusumoto et al.'s piston rod 8, containing heaters 20 and 22, does "disrupt the internal shape" of the valve as specifically not claimed. Further Kusumoto et al.'s valve contains "heaters . . . located at several portions to prevent inner surfaces and surfaces of valve components from depositing of material [ ]" (Kusumoto et al., column 5 lines 24-26, emphasis added) and not a heater "operative to locally heat the downstream void and downstream connector. . . ." as claimed. For any of the above mentioned reasons, claim 1 is not anticipated by Kusumoto et al.

Claims 2-5 depend from claim 1 and therefore are not anticipated for at least the reasons stated above for claim 1.

Further, claim 4 as currently amended requires "the downstream connector further comprises a notch forming a discontinuity extending axially along the inner periphery of the downstream connector to break surface tension." The Examiner relies on a "step between the inlet 2 and body 1, which is seen as a discontinuity surface. . ." (Office Action of 9/16/08 at p. 4) for satisfying this limitation. Applicants respectfully disagree. The Examiner is seemingly referencing an unmarked feature of Kusumoto et al.'s figure and not a point of novelty. Kusumoto et al. does not teach or suggest a "notch forming a discontinuity extending axially along the inner periphery of the downstream connector to break surface tension" as claimed and claim 4 is not anticipated thereby.

Additionally, claim 5 as currently amended requires "the valve body is provided with a cavity forming a thermal break between the heater and the upstream connector for limiting heat conduction to the upstream connector and for maximizing achievable temperature in the downstream void and the downstream connector of said valve." (emphasis added) The Examiner relies on Kusumoto et al.'s flange portion 4a for satisfying the claim limitation stating "[a] thermodynamic external body is shaped to maximize the heat into the metal sealing face (4a) that comes into contact with the flexible sealing membrane." (Office action of 9/16/08 at p. 5). Kusumoto et al. does not teach or suggest that the external body of its valve includes a cavity that both limits "heat conduction to the upstream connector and . . . maximiz[es] achievable temperature in the downstream void and the downstream connector . . ." as claimed and claim 5 is not anticipated thereby.

Claim 7 is not anticipated by Kusumoto et al. for at least the reasons stated above for claim 1.

Claims 8 and 9 depend from claim 7 and therefore are not anticipated for at least the reasons stated above for claim 7.

Further, claim 9 as amended requires "the valve body is provided with a cavity forming a thermal break between the heater and the upstream connector for limiting heat conduction to the upstream connector and for maximizing the heat conducted into the sealing face . . . ." (emphasis added) In addition to the argument above with respect to claim 5, Kusumoto et al. does not teach or suggest that the external body of its valve both limits "heat conduction to the upstream connector and . . . maximiz[es] the heat conducted into the sealing face . . ." as claimed and claim 9 is not anticipated thereby.

Claim 11 is not anticipated by Kusumoto et al. for at least the reasons stated above for claim 1.

Claims 12-13 depend from claim 11 and therefore are not anticipated for at least the reasons stated above for claim 11.

Further claim 13 is not anticipated for the reasons stated above for claim 9.

**Rejection of claims 1-5, 7-9 and 11-13 by Chovan**

The Examiner has rejected claims 1-5, 7-9 and 11-13 under 35 U.S.C. § 102 (b) as being anticipated by Chovan (US Patent No. 5,941,271).

Amended claim 1 requires "a smooth and contoured unitary valve body with an integral upstream connector, downstream connector and a smooth and contoured internal shape for providing a defined flow path there between. . . ." (emphasis added) The valve taught by Chovan is not unitary, rather it includes a valve body 12 with numerous threaded attachments, including a "first connection means 18 . . . and second connection means 19. . ." and exhaust port 20 (Chovan, column 4, lines 16-32, and Figure 1A). Chovan's valve is an example of a prior art valve that the Applicant provides improvements over, a valve that comprises "internal joints, crevices, sliding grooves and attachments . . . [which] provide areas for product to lodge, harbouring microbiological contamination and creating difficulties for cleaning." (Page 2, starting at line 30) Chovan does not teach or suggest a "unitary valve body with an integral upstream connector, downstream connector . . ." as claimed and claim 1 is not anticipated thereby.

Further, claim 1 as amended requires "a flexible sealing membrane. . . selectively operable to a range of positions relative to the sealing face to vary the flow rate of fluid through said valve . . ." (emphasis added) The Examiner relies on the first seal 30 taught by Chovan for satisfying the claim limitation. The "first seal 30 [is positioned] to open or close a flowpath 43 between internal space 32 of the first attachment means 18 and exhaust port 20." (Chovan, column 4, lines 33-35.) The first seal is not "selectively operable to . . . vary the flow rate. . ." as claimed and claim 1 is not anticipated thereby. (emphasis added)

Additionally, amended claim 1 requires "an elongated heater mounted adjacent to the downstream connector and within said valve body so as not to be in contact with the fluid or disrupt the smooth and contoured internal shape, said heater being operative to locally heat the downstream void and the downstream connector . . ." (emphasis added) The Examiner



relies on heater 90 for satisfying the claim limitations (of the previously presented claim). Chovan's "heater [is] formed as a blanket 90 wrapped around an exterior portion of the valve body. . . ." (Chovan at column 8, lines 8-10, emphasis added.) Chovan's heater is not mounted "within said valve body" as claimed, rather it is an example of a prior art heat wrap that the Applicants provide improvements over, a heater that "when applied to valve bodies can be bulky, difficult to apply efficiently and difficult [to] reapply after removal for maintenance and can create external cleaning issues in hygienic industries." (Page 2, starting at line 25.) Additionally, "[t]he purpose of the electric heater would be for preventing icing of the water release valve." (Chovan at column 8, lines 14-16, emphasis added.) Chovan's heater is not "operative to locally heat the downstream connector. . ." as claimed. For any of the above mentioned reasons, claim 1 is not anticipated by Chovan.

Claims 2-5 depend from claim 1 and therefore are not anticipated for at least the reasons stated above for claim 1.

Further, claim 4 as currently amended requires "the downstream connector further comprises a notch forming a discontinuity extending axially along the inner periphery of the downstream connector to break surface tension." The Examiner relies on "a step between the connector (18) and body (32), which is seen as a discontinuity surface." (Office Action of 9/16/08 at p. 5.) Applicants disagree. The Examiner is seemingly referencing an unmarked feature of Chovan's figure and not a point of novelty. Chovan does not teach or suggest a "notch . . . to break surface tension" as claimed and claim 4 is not anticipated thereby.

Additionally, claim 5 as currently amended requires "the valve body is provided with a cavity forming a thermal break between the heater and the upstream connector for limiting heat conduction to the upstream connector and for maximizing achievable temperature in the downstream void and the downstream connector of said valve." (emphasis added.) The Examiner states "[a] thermodynamic external body is shaped to maximize the heat into the metal sealing face (24) that comes into contact with the flexible sealing membrane. . ." (Office Action of 9/16/08 at p. 6.) Chovan does not teach or suggest that the external body of its valve includes a cavity that both limits "heat conduction to the upstream connector and . . . maximiz[es]

achievable temperature in the downstream connector. . ." as claimed and claim 5 is not anticipated thereby.

Claim 7 is not anticipated by Chovan for at least the reasons stated above for claim 1.

Claims 8 and 9 depend from claim 7 and therefore are not anticipated for at least the reasons stated above for claim 7.

Further, claim 9 as amended requires "the valve body is provided with a cavity forming a thermal break between the heater and the upstream connector for limiting heat conduction to the upstream connector and for maximizing the heat conducted into the sealing face . . . ." (emphasis added.) In addition to the argument above with respect to claim 5, Chovan does not teach or suggest that the external body of its valve both limits "heat conduction to the upstream connector and . . . maximiz[es] the heat conducted into the sealing face . . ." as claimed and claim 9 is not anticipated thereby.

Claim 11 is not anticipated by Kusumoto et al. for at least the reasons stated above for claim 1.

Claims 12-13 depend from claim 11 and therefore are not anticipated for at least the reasons stated above for claim 11.

Further claim 13 is not anticipated for the reasons stated above for claim 9.

***Conclusion***

In view of the foregoing, the Applicant respectfully asserts that the application is in condition for allowance, which allowance is hereby respectfully requested.

Respectfully submitted,

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Date: January 16, 2009

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Attachment: Replacement Sheets (3)